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This Note documents the definition and creation of civilian income and income-related variables created from the 1986 Reserve Components Survey database designed and conducted by the Defense Manpower Data Center. It presents the sources used to construct the civilian income variable, the contents of the computer data files incorporated into the 1986 Reserve Components Survey database, and selected income characteristics of reserve personnel.

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A RAND NOTE

N-2734-FMP/RA

Civilian Income of Military Reservists: Data from the 1986 Reserve Components Surveys

William T. Mickelson

May 1988

Prepared for
The Offices of the Assistant Secretaries of Defense for Force Management and Personnel and for Reserve Affairs

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PREFACE

This Note documents the definition and creation of civilian income and income-related variables created from the 1986 Reserve Components Survey database designed and conducted by the Defense Manpower Data Center. Presented are the sources used to construct the civilian income variable, the contents of the computer data files incorporated into the 1986 Reserve Components Survey database, and selected income characteristics of reserve personnel.

The task involved extensive data cleaning, definition and creation of civilian income and income-related variables, estimation of total civilian income given multiple sources of income data, and exploratory tabulations on the variables created. The information should be of particular interest to researchers and programmers working on compensation issues pertaining to Guard/Reserve personnel.

The research was sponsored by the Offices of the Assistant Secretaries of Defense for Force Management and Personnel and for Reserve Affairs as part of their support for the Sixth Quadrennial Review of Military Compensation. This Note was prepared by the Defense Manpower Research Center, part of RAND's National Defense Research Institute, a Federally Funded Research and Development Center supported by the Office of the Secretary of Defense.

SUMMARY

The *1986 Reserve Components Survey of Officer and Enlisted Personnel* and the *1986 Reserve Components Survey of Guard/Reserve Spouses* form the first comprehensive survey of Guard/Reserve members and their spouses. The information obtained through the surveys provides baseline information on the composition of the reserve population for current use and for comparison with future data.

The raw survey data on civilian income and other income-related variables were examined. A set of rules for editing/correcting/imputing the civilian income variables was developed and additional civilian income and income-related variables was created for officer and enlisted reserves using alternative sources of income data. Exploratory tabulations on the civilian income variables were calculated to gain insight into the civilian income characteristics of the reserve force.

Keywords: Military reserves, Compensation, (Civ

CONTENTS

FIGURES

TABLES

I. INTRODUCTION

The *1986 Reserve Components Survey of Officer and Enlisted Personnel* and the *1986 Reserve Components Survey of Guard/Reserve Spouses* form the first comprehensive survey of Guard/Reserve members and their spouses. The information obtained through these surveys provides baseline information on the composition of the reserve population for current use and for comparison with future data.

PURPOSE OF THE SURVEYS

The 1986 Reserve Components Survey data will be used to study a wide range of reserve issues. The surveys make it possible to examine the relationships between families and the retention and readiness of reserve members. They allow the Department of Defense and the individual components to assess the need for family-related programs and policies in the event of mobilization. Finally, the data enable policy researchers and policy makers to answer a variety of questions about Guard/Reserve families which heretofore have been the subject of broad stereotyping and speculation. These in turn can be used in the formulation and justification of programs and budgets, particularly those related to readiness, recruiting and retention management, and human resource issues.

In addition, the 1986 Reserve Components Survey data will be used by the Sixth Quadrennial Review of Military Compensation (QRMC). The QRMC has been tasked to perform a comprehensive evaluation of the benefits and costs of all reserve compensation programs.

QUESTIONS ON CIVILIAN INCOME

An important variable to be created and incorporated into the 1986 Reserve Components Survey database is that of Total Household Income. Total household income of families with one or more members in the Guard/Reserves is composed of Total Household Military Income and Total Household Civilian Income. This Note considers only the civilian income

of reserve personnel and their spouses. Military income is being assessed by another contractor.

The *Reserve Components Survey of Officer and Enlisted Personnel* and the *Reserve Components Survey of Guard/Reserve Spouses* ask identical questions pertaining to civilian income of the survey respondent and the household. The income questions focus on the civilian income of the survey respondent, spouse, and other civilian income. The primary income questions from the Reserve Components Survey used to obtain estimates of Total Civilian Household Income are listed below for reference:

1. In 1985, what were your USUAL WEEKLY EARNINGS from your (main) civilian job or your own business before taxes and other deductions? (q. e104, o104, s51)
2. During 1985, what was the TOTAL AMOUNT THAT YOU EARNED FROM ALL CIVILIAN JOBS or your own business BEFORE taxes and other deductions? (q. e108, o108, s52)
3. Altogether in 1985, what was the total amount that YOUR SPOUSE earned from a civilian job or his or her own business, BEFORE taxes and other deductions? (q. e114, o114, s58)
4. During 1985, how much did you or your spouse receive from other income sources, i.e., interest, capital gains, alimony, unemployment, etc. (q. e116, o116, s65)
5. Altogether in 1985, how many weeks did you work for pay, either full- or part-time, at a civilian job? Include weeks that you were on paid vacation, paid sick leave, and military leave.

OVERVIEW OF NOTE

The Defense Manpower Data Center (DMDC) asked RAND to: (1) develop a set of rules for editing/correcting/imputing the civilian income variables, and (2) create new civilian income and related variables where appropriate.

The results of this work are two SAS computer files containing the variables created by RAND. One file contains variables pertaining to officer reserves and another file contains variables for enlisted

reserves. The files have been incorporated into the 1986 Reserve Components Survey database.

This Note documents the income-related and civilian income variables created by RAND that are incorporated into the 1986 Reserve Components Survey database and presents income characteristics of officer and enlisted reserves and their households. Section II of this Note documents how the civilian income variables were constructed. Section III defines all income-related variables and civilian income variables contained in the final RAND database given to the DMDC in Monterey. Section IV presents income characteristics of officer and enlisted reserves and their households.

II. CONSTRUCTION OF CIVILIAN INCOME VARIABLES

Survey research is always subject to some degree of respondent error, both unintentional and deliberate. Errors in the survey data are generally attributable to: (1) the respondent's incorrect interpretation of the question (e.g., reports income per paycheck instead of income per week), (2) misreporting or miscoding of response (e.g., the respondent inadvertently deletes or adds a digit when reporting income), or (3) deliberate nonresponse to a question.

The raw survey data are valuable and should be preserved. But because of respondent error and nonresponse error in the existing civilian income variables, it is necessary to examine and then correct/impute/refine the values for these variables when data are questionable. Accordingly, RAND has constructed a new set of total civilian income variables, for the Reserve Components Survey database.

For imputing/refining the total civilian income variables, three sources of data were identified:

- Respondent's survey
- Spouse's survey
- Regression estimates

A description and assessment of each source is given below. The collection of rules for deciding which source of data to replace/fill-in the total civilian income value is presented in Section III.

RESPONDENT'S SURVEY

Responses to the questionnaires were received from 11,583 officer reserves, 6868 officer reserve spouses, 48,636 enlisted reserves, and 20,732 enlisted reserve spouses. Questionnaires were sent only to spouses of reservists participating in the survey.

The reservist questionnaire for officer and enlisted reserves and the spouse questionnaire contain identical income-related questions. Both surveys ask the respondent for his/her total 1985 civilian income from all civilian jobs before taxes, the usual weekly civilian income from his/her main civilian job before taxes, and the number of weeks worked for pay, either full or part-time, at a civilian job.

The product of the weekly income and the number of weeks worked is the only combination of survey variables that was intended as a consistency check for the respondent's total civilian income. In most cases, the reservist's or spouse's raw response to the total civilian income question is accurate and should not be adjusted. If the raw total civilian income response is questionable, then the product of the weekly variables can be used as a source of data for imputing a value of the respondent's total civilian income. However, this consistency check may not be valid for all respondents.

Close examination of the survey questions shows that the questions are not completely consistent in their wordings. For example, if a reservist changed civilian jobs or had more than one civilian job during 1985, the product of the weekly variables may be significantly different from his total civilian income. Fortunately, a relatively small number of reserves are of this type.

SPOUSE'S SURVEY

The spouse questionnaire and the reservist questionnaire contain questions in which the respondent reports his/her spouse's total civilian income. In those cases where a reservist (or a spouse) did not provide relevant income-related information and data exist from his/her spouse, there exists an imputation source for total civilian income.

Data on officer and enlisted reservists who have spouses who responded to the spouse's survey were used to evaluate this imputation source of civilian income. Records were selected where both the reservists and their spouses gave income estimates for themselves and income estimates for their spouses. Descriptive statistics and correlations were calculated to determine how well the spouse's estimate

of the reservist's income compares to the reservist's estimate of his own income, and similarly, how well the reservist's estimate of his spouse's income compares to the spouse's estimate of her own income.

Comparison of Estimate to Actual

Tables 2.1 and 2.2 show means and standard deviations of total civilian incomes for officer reserves and their spouses, and enlisted reserves and their spouses, respectively.

For these survey populations, the mean of the differences (own - other) indicates that the spouse tends to, on average, underestimate the reservist's civilian income. This is understandable in that the spouse typically sees only take-home pay, and not the actual income before taxes (which is what the reservist is reporting). On the other hand, the reservist, on average, tends to slightly overestimate the spouse's civilian income, although not by a significant amount.

This result must be tempered by the fact that the means of the differences are rather small as a percentage of mean civilian incomes and relative to the variance of the difference of income estimates. To further illustrate the implication of this point: if a household were chosen at random, the probability the spouse underestimates the

Table 2.1

DESCRIPTIVE STATISTICS OF TOTAL CIVILIAN INCOMES
FOR OFFICER RESERVES AND THEIR SPOUSES

	Officer's Income		Spouse's Income	
	Mean	Std	Mean	Std
Own estimate	36755	20038	17040	14747
Other estimate	35308	19465	17221	14720
Difference (own - other)	1447	11952	- 181	8953

NOTE: Own estimate is the estimate of civilian income by person who earned the income. Other estimate is the estimate of civilian income by a person who did not earn the income. The number of observations in this sample is 3493.

Table 2.2

DESCRIPTIVE STATISTICS OF TOTAL CIVILIAN INCOMES
FOR ENLISTED RESERVES AND THEIR SPOUSES

	Enlisted Income Mean	Enlisted Income Std	Spouse Income Mean	Spouse Income Std
Own estimate	23083	12182	12189	9752
Other estimate	21759	11630	12257	10257
Difference (own - other)	1324	8845	- 67	8481

NOTE: Own estimate is the estimate of civilian income by person who earned the income. Other estimate is the estimate of civilian income by a person who did not earn the income. The number of observations in this sample is 10001.

reservist's income is not much greater than one-half. In other words, the overall tendency to underestimate a spouse's income does not lend much additional income-related information for any given household.

Table 2.3 shows the correlations between the two estimates of civilian income for officer and enlisted reservists. The correlations are quite high, indicating a strong linear relationship between the spouse's estimate of the reservist's income and the reservist's estimate of his own income, as well as the reservist's estimate of his spouse's income and the spouse's estimate of her own income.

Table 2.3

CORRELATION OF THE TWO ESTIMATES
OF CIVILIAN INCOME

Income	Type of Reservist Officer	Enlisted
Reservist's	0.81731	0.72499
Spouse's	0.81537	0.64176

The high correlation of the two estimates of civilian income, along with the results presented in Tables 2.1 and 2.2, suggest that using the spouse's income data as an imputation source for reservist's civilian income is a viable option. The same is true for the reservist's data as an imputation source for the spouse's civilian income. There are still difficulties that need to be accounted for: Identifying outliers, and who should be believed if information exists from both the reservist and the spouse?

REGRESSION ESTIMATE

In cases in which the reservist has not reported total civilian income or the weekly income variables, and his spouse does not give an estimate for the reservist's income (or the spouse was not part of the spouse survey, or the reservist is not married), the only other alternative for imputing a value for total civilian income is using some form of an estimate. Regression equations were used to estimate total civilian income. Only 426 or 3.7 percent of the officer records and 3728 or 7.7 percent of the enlisted records required replacement of the total civilian income variable by the regression estimate.

For analysis purposes, the officer and enlisted survey data were each split into two groups. One group consisted of those reserves whose spouses responded to the spouse questionnaire, and the other consisted of those reserves who did not have spouse survey data. This was done for two reasons: (1) it was felt that reservists who are not married would exhibit different behavior characteristics than reservists who are married, and (2) the division of the data into groups facilitated the development of the civilian income replacement rules (see Sec. III), by eliminating many redundant tests and checks.

Regression Equation

Regression equations were determined for the four groups. The regression equations were fit to reserve data where the product of weekly income and the number of weeks worked was within 50 percent of total civilian income. The regression equations are a function of age,

age squared, sex (male or female), race (white or nonwhite), level of education completed (did not complete high school, completed high school, completed college), current status (working full time, working part time, in school, not working, other [self-employed, working full time as Guard/Reserve technician, did not report status]), region of the country (northeast, midwest, south, west, other [did not report region of country]), and occupation group (professional/managerial/administration, technical, sales, clerical, craft, security, labor, service, farmer, and other [had no civilian job]). Age and age squared are the only continuous variables, with all other variables being indicator variables.

The regression equations for estimating total civilian income were determined in a two-step process. First, preliminary regressions were run to determine potential significant variables; at least one level from each factor was dropped to permit identification of parameters. Variables found to be not significant were removed from the model and the regressions were rerun to determine the final coefficients. All variables are significant at the 0.10 level unless otherwise indicated. Tables 2.4 and 2.5 show the regression coefficients and T-statistics for officer and enlisted groups.

Table 2.6 gives the means of the continuous variables and the counts of the indicator variables used in determining the coefficients of the regression equations.

Lognormal regression equations were fit to the above specified populations and compared to the standard regression results. The mean of the difference--actual minus predicted--was not significantly different from zero in both regression models. The standard regression was chosen over the lognormal model for estimating total civilian income of officer and enlisted reserves because of smaller mean squared error (MSE) and easier interpretation of the regression coefficients. (For officer reserves: MSE = 217 from standard regression versus MSE = 223 for lognormal regression. For enlisted reserves: MSE = 61 from standard regression versus MSE = 66 for lognormal regression.)

Table 2.4

REGRESSION COEFFICIENTS AND T-STATISTICS FOR ESTIMATING TOTAL CIVILIAN INCOME OF OFFICER RESERVE PERSONNEL

Independent Variable	With Spouse Coefficient	t	No Spouse Coefficient	t
Constant[a]	-34979.76	-4.381	-56525.41	-8.893
Age	1597.23	4.083	2870.66	8.550
Age(sq)	-8.25	-1.700	-23.73	-5.548
Male	9142.88	7.433	9227.29	12.353
White	-2762.52	-2.013	0.0	NS
EDUCATION				
Other	0.0	NS	0.0	NS
High school	0.0	NS	-5989.32	-3.286
College	5889.14	3.230	0.0	NS
CURRENT STATUS				
Full time work	8423.48	7.351	8677.98	7.885
Part time work	0.0	NS	-2169.81	-1.842
In school	-5675.05	-3.916	-2832.79	-2.561
Not working	-3748.47	-2.083	-4711.38	-3.261
Other	0.0	NS	0.0	NS
REGION				
Northeast	0.0	NS	0.0	NS
Midwest	0.0	NS	-2311.66	-2.839
South	0.0	NS	-1209.12	-1.804
West	0.0	NS	0.0	NS
Other	0.0	NS	0.0	NS
OCCUPATION				
Prof/mgrl/admin	5215.64	4.720	6646.34	7.026
Technical	3927.23	2.623	4806.65	3.746
Sales	8040.17	4.655	7812.53	5.279
Clerical	-8685.22	-1.915	0.0	NS
Craft	-6515.10	-2.502	0.0	NS
Security	0.0	NS	0.0	NS
Service	0.0	NS	0.0	NS
Labor	0.0	NS	0.0	NS
Farmer	0.0	NS	0.0	NS
Other	0.0	NS	0.0	NS
	N=2862 R(sq)=0.2272 F=64.42		N=3196 R(sq)=0.3219 F=116.17	

NOTE: NS = Not significant.

[a]Estimate for female or nonwhite reservist; includes estimate for polytomous variables where level is not significant.

Table 2.5

REGRESSION COEFFICIENTS AND T-STATISTICS FOR ESTIMATING TOTAL CIVILIAN INCOME OF ENLISTED RESERVE PERSONNEL

Independent Variable	With Spouse Coefficient	t	No Spouse Coefficient	t
Constant[a]	-30433.02	-12.540	-26070.99	-18.526
Age	1620.95	16.522	1390.19	23.253
Age(sq)	-15.63	-12.182	-12.06	-14.120
Male	5350.97	9.203	3738.23	15.187
White	0.0	NS	576.13	3.127
EDUCATION				
Other	0.0	NS	0.0	NS
High school	3892.37	2.932	3046.92	3.748
College	5279.69	3.958	4073.35	4.980
CURRENT STATUS				
Full time work	1894.73	6.150	2725.86	12.781
Part time work	-2116.00	-4.822	-2495.26	-10.023
In school	-1638.31	-3.489	-2367.08	-9.883
Not working	-4214.99	-7.833	-2802.17	-9.466
Other	0.0	NS	0.0	NS
REGION				
Northeast	7046.30	8.372	6258.83	12.188
Midwest	5503.83	6.591	4869.56	9.533
South	4612.59	5.584	4834.71	9.585
West	7126.08	8.377	6276.05	12.085
Other	0.0	NS	0.0	NS
OCCUPATION				
Prof/mgrl/admin	3087.18	9.993	3147.16	12.485
Technical	2810.74	7.954	2621.18	9.564
Sales	0.0	NS	-621.27	-1.858
Clerical	-1915.00	-3.318	-1144.27	-3.347
Craft	0.0	NS	0.0	NS
Security	1703.62	3.866	567.61	1.799
Service	-4985.62	-7.062	-4173.93	-11.981
Labor	-2016.68	-6.070	-1700.24	-7.588
Farmer	-6542.92	-3.998	-4701.38	-6.065
Other	0.0	NS	0.0	NS
	N=7562 R(sq)=0.2919 F=155.46		N=14,239 R(sq)=0.4332 F=493.82	

NOTE: NS = Not significant.

[a]Estimate for female or nonwhite reservist; includes estimate for polytomous variables where level is not significant.

Table 2.6

MEANS AND COUNTS OF CONTINUOUS VARIABLES
AND INDICATOR VARIABLES

Variable	Officer		Enlisted	
	With Spouse	No Spouse	With Spouse	No Spouse
Age	39.45	37.69	37.12	30.99
Age(sq)	1599.02	1471.88	1444.75	1041.20
Male	2595 (90.7)	2471 (77.3)	7251 (95.9)	12546 (88.1)
White	2697 (94.2)	2886 (90.3)	6793 (89.8)	11169 (78.4)
EDUCATION				
Other	NA	3 (0.1)	50 (0.7)	118 (0.8)
High school	98 (3.4)	94 (2.9)	3533 (46.7)	7136 (50.1)
College	2764 (96.6)	3099 (97.0)	3979 (52.6)	6985 (49.1)
CURRENT STATUS				
Full time work	2581 (90.2)	2793 (87.4)	6254 (82.7)	10923 (76.7)
Part time work	183 (6.4)	307 (9.6)	525 (6.9)	1955 (13.7)
In school	162 (5.7)	306 (9.6)	460 (6.1)	2141 (15.0)
Not working	120 (4.2)	162 (5.1)	366 (4.8)	1144 (8.0)
Other[a]	134 (4.7)	115 (3.6)	833 (11.0)	956 (6.7)
REGION				
Northeast	553 (19.3)	644 (20.2)	1536 (20.3)	3047 (21.4)
Midwest	576 (20.1)	629 (19.7)	1922 (25.4)	3434 (24.1)
South	1159 (40.5)	1190 (37.2)	2778 (36.7)	5017 (35.2)
West	545 (19.0)	684 (21.4)	1193 (15.8)	2420 (17.0)
other	29 (1.1)	49 (1.5)	133 (1.8)	321 (2.3)
OCCUPATION				
Prof/mgrl/admin	2120 (74.1)	2274 (71.2)	1952 (25.8)	2418 (17.0)
Technical	247 (8.6)	309 (9.7)	1102 (14.6)	1636 (11.5)
Sales	152 (5.3)	194 (6.1)	412 (5.4)	926 (6.5)
Clerical	15 (0.5)	49 (1.5)	321 (4.2)	984 (6.9)
Craft	52 (1.8)	47 (1.5)	1148 (15.2)	1927 (13.5)
Security	130 (4.5)	115 (3.6)	585 (7.7)	1062 (7.5)
Service	14 (0.5)	28 (0.9)	191 (2.5)	833 (5.9)
Labor	45 (1.6)	71 (2.2)	1312 (17.3)	3202 (22.5)
Farmer	2 (0.1)	5 (0.2)	33 (0.4)	134 (0.9)
Other	85 (3.0)	104 (3.2)	506 (6.7)	1117 (7.8)

NOTE: NA = Not available.

[a]It is possible for the reservist to be in school and working full time, part time, or not at all.

III. CONTENTS OF DATA FILES

Two SAS data sets containing the variables created by RAND have been sent to DMDC in Monterey for incorporation into the 1986 Reserve Components Survey database. One file contains variables pertaining to officer reserves and the other file contains variables for enlisted reserves.

Each of the data sets contains variables of the following types:

- Indicators of existence and consistency
- Total civilian income
- Replacement indicators

This section contains definitions for all created variables, distributions for all indicator variables, and replacement rules for raw survey data in the total civilian income variables.

INDICATORS OF EXISTENCE AND CONSISTENCY

The product of weekly civilian earnings and the number of weeks worked is the only combination of survey variables that form a consistency check on the total civilian income of the respondent. Six income-related indicator variables were created to determine the existence of the civilian income raw survey data and the consistency between the product of the weekly variables and total civilian income. An existence variable and a consistency variable were created for officer and enlisted reserves, and for spouses. The definition of these variables is given below. The variable names are indented and in boldface print.

Definition of Officer Variables

The following variables pertain to officer reserve members and are incorporated into the officer data set.

OFFDATA *Indicator of the presence of civilian income-related data for officer reservists.*

OFFDATA is a string variable consisting of three indicators that distinguish the eight possible combinations of the variables, total civilian income (survey question o108), usual weekly earnings (survey question o104), and number of weeks worked (survey question o109). The meanings of the three indicators are:

```
0  0  0
|  |  |____ 1 if number of weeks paid is > 0, 0 otherwise.
|  |
|  |_______ 1 if usual weekly earning is > 0, 0 otherwise.
|
|__________ 1 if total civilian income is > 0, 0 otherwise.
```

OCONSIST Indicator of the level of consistency between the product of weekly income and number of weeks paid, and total civilian income for officer reservists.

-1 = Missing (OFFDATA ≤ 110).

1 = Product of weekly income and number of weeks paid is within 25 percent of total civilian income.

2 = Product of weekly income and number of weeks paid differs by at least 25 percent and less than 50 percent of total civilian income.

3 = Product of weekly income and number of weeks paid differs by at least 50 percent and less than 75 percent of total civilian income.

4 = Product of weekly income and number of weeks paid differs by more than 75 percent of total civilian income.

Definition of Enlisted Variables

The following variables pertain to enlisted reserve members and are incorporated into the enlisted data set.

ENLDATA Indicator of the presence of civilian income-related data for enlisted reservists.

ENLDATA, like OFFDATA, is a string variable consisting of three indicators that distinguish the eight possible combinations of the variables, total civilian income (survey question e108), usual weekly earnings (survey question e104), and number of weeks worked (survey question e109). The meanings of the three indicators are:

```
0  0  0
|  |  |____ 1 if number of weeks paid is > 0, 0 otherwise.
|  |
|  |_______ 1 if usual weekly earning is > 0, 0 otherwise.
|
|__________ 1 if total civilian income is > 0, 0 otherwise.
```

ECONSIST Indicator of the level of consistency between the product of weekly income and number of weeks paid, and total civilian income for enlisted reservists.

-1 = Missing (ENLDATA ≤ 110).

1 = Product of weekly income and number of weeks paid is within 25 percent of total civilian income.

2 = Product of weekly income and number of weeks paid differs by at least 25 percent and less than 50 percent of total civilian income.

3 = Product of weekly income and number of weeks paid differs by at least 50 percent and less than 75 percent of total civilian income.

4 = Product of weekly income and number of weeks paid differs by more than 75 percent of total civilian income.

DEFINITION OF SPOUSE VARIABLES

The following variables pertain to the spouses of Guard/Reserve members and incorporated into both the officer and reserve data sets.

SPSDATA Indicator of the presence of civilian income-related data for the spouse of the reservists.

SPSDATA, like OFFDATA, is a string variable consisting of three indicators that distinguish the eight possible combinations of the variables, spouse's total civilian income (spouse survey question s52), spouse's usual weekly earnings (spouse survey question s51), and number of weeks spouse worked (spouse survey question s46). The meanings of the three indicators are:

```
0  0  0
|  |  |____ 1 if number of weeks paid is > 0, 0 otherwise.
|  |
|  |_______ 1 if usual weekly earning is > 0, 0 otherwise.
|
|__________ 1 if total civilian income is > 0, 0 otherwise.
```

SCONSIST Indicator of the level of consistency between the product of weekly income and number of weeks paid, and total civilian earning for the spouse.

-1 = Missing (SPSDATA ≤ 110).

1 = Product of weekly income and number of weeks paid is within 25 percent of total civilian income.

2 = Product of weekly income and number of weeks paid differs by at least 25 percent and less than 50 percent of total civilian income.

3 = Product of weekly income and number of weeks paid differs by at least 50 percent and less than 75 percent of total civilian income.

4 = Product of weekly income and number of weeks paid differs by more than 75 percent of total civilian income.

Distribution of Existence and Consistency Variables

Table 3.1 shows the distribution of the variables OFFDATA and SPSDATA that are found in the officer data file. SPSDATA = -1 means the officer does not have a spouse who responded to the *1986 Reserve Components Survey of Guard/Reserve Spouses*. Table 3.2 shows the distribution of the variables OCONSIST and SCONSIST that are found in the officer data file.

Table 3.3 shows the distribution of the variables ENLDATA and SPSDATA that are found in the enlisted data file. SPSDATA = -1 means the enlisted reservist does not have a spouse who responded to the *1986 Reserve Components Survey of Guard/Reserve Spouses*. Table 3.4 shows the distribution of the variables ECONSIST and SCONSIST that are found in the enlisted data file.

Table 3.1

DISTRIBUTION OF OFFDATA AND SPSDATA VARIABLES
IN RESERVE COMPONENTS SURVEY: OFFICER FILE

Code	OFFDATA	Percent	SPSDATA	Percent
-1	0	0.0	4715	40.7
000	715	6.2	2005	17.3
001	323	2.8	5	0.0
010	101	0.9	282	2.4
011	432	3.7	171	1.5
100	18	0.2	3	0.0
101	282	2.4	13	0.1
110	235	2.0	70	0.6
111	9477	81.8	4319	37.3
Total	11583	100.0	11583	100.0

Table 3.2

DISTRIBUTION OF OCONSIST AND SCONSIST VARIABLES
IN RESERVE COMPONENTS SURVEY: OFFICER FILE

Code	OCONSIST	Percent	SCONSIST	Percent
-1	2106	18.2	7264	62.7
1	7273	62.8	3213	27.7
2	1077	9.3	518	4.5
3	332	2.9	186	1.6
4	795	6.9	402	3.5
Total	11583	100.0	11583	100.0

Table 3.3

DISTRIBUTION OF ENLDATA AND SPSDATA VARIABLES
IN RESERVE COMPONENTS SURVEY: ENLISTED FILE

Code	ENLDATA	Percent	SPSDATA	Percent
-1	0	0.0	27904	57.4
000	5685	11.7	5886	12.1
001	1553	3.2	32	0.1
010	808	1.7	932	1.9
011	1923	4.0	677	1.4
100	217	0.4	25	0.1
101	1219	2.5	64	0.1
110	2039	4.2	236	0.5
111	35192	72.4	12880	26.5
Total	48636	100.0	48636	100.0

Table 3.4

DISTRIBUTION OF ECONSIST AND SCONSIST VARIABLES
IN RESERVE COMPONENTS SURVEY: ENLISTED FILE

Code	ECONSIST	Percent	SCONSIST	Percent
-1	13444	27.6	35756	73.5
1	22032	45.3	8928	18.4
2	5964	12.3	1715	3.5
3	1966	4.0	654	1.3
4	5230	10.8	1583	3.3
Total	48636	100.0	48636	100.0

Total Civilian Income

Rules have been developed to adjust the raw data responses in the Reserve Components Surveys for nonresponse and other errors. Using these rules, two civilian income variables were created and serve as corrected/refined versions of the total civilian income variables. One variable is for total civilian income of reserve members, and the other is for the total civilian income of the spouse.

It was assumed in developing the replacement rules that for any given person in the reserves, if the original data seemed questionable or were missing, the objective was not to determine his/her actual income, but rather to determine the income value representative of that type of reservist given the data available.

Definition of total civilian income variables and the rules for replacing the raw survey data are given below.

Variable Definition

The following variables are contained in both the officer and enlisted data sets.

RESINCOM = Reservist's total civilian income.

= -1 if reservist did not have a job in 1985 and did not report civilian income.

= 100000 if reservist made at least $100,000 during 1985.

SPSINCOM = Spouse's total civilian income.

= -1 if spouse did not have a job in 1985 and did not report civilian income.

= 100000 if spouse made at least $100,000 during 1985.

INCXREGR = Reservist's total civilian income as estimated by regression equation.

= -1 if reservist did not have a job in 1985 and did not report civilian income.

(NOTE: INCXREGR is reported for all reserve personnel, and is used as the imputation source when no other information is available.)

Replacement Rules

The following rules were applied to officer and enlisted reserves who responded to the 1986 Reserve Components Survey data and the spouses who responded to the 1986 Reserve Components Survey of Spouses in order to create the RESINCOM and SPSINCOM variables. Regression estimates of spouse's total civilian income were not applicable and are not part of the replacement rules for the SPSINCOM variable. The replacement rules are given below:

1. Two initial consistency checks were made. Failing both consistency checks resulted in the data being further evaluated and potentially replaced/filled in. If the respondent passed either of the checks, raw response was not replaced.

   a. The first check compared the product of weekly civilian income and the number of weeks worked with the total civilian income. If the product of the weekly variables differed by more than 5% percent of the total civilian income, or some combination of the respondent's civilian income variables [illegible] the record failed the test.

b. The second check compared the respondent's estimate of total civilian income with his spouse's estimate of his total civilian income if the spouse's data were available for those respondents who failed the first test. If these estimates differed by more than $2500, the record failed this test.

2. The income variables were checked for extreme values. Records where total civilian income was less than $2500 or total civilian income exceeded $90,000 were considered extreme values. These records were examined by hand to determine the explicit rules to replace the values.

3. If the respondent's total civilian income was missing and at least one of the weekly income variables was missing (e.g., ENLDATA ≤ 010), the total civilian income was filled in using the spouse's estimate of the reservist's income. Estimates that were potential outliers were excluded (e.g., the reservist was not in school, or not working part-time, and the estimate was less than $10,000). If spouse data were not available or excluded as an outlier, the regression estimate was used.

4. If the respondent's total civilian income was missing but the weekly income variables were reported and acceptable (e.g., number of weeks paid ≥ 45), then the income was filled in by the product of the weekly variables. If the weekly income variables were not acceptable and spouse's data were available, then the total civilian income was filled in using the spouse's estimate of the reservist's income; otherwise the regression estimate was used.

5. If the respondent's total civilian income was reported and at least one of the weekly income variables was missing (e.g., 100 ≤ENLDATA≤ 110), and the spouse's estimate of the reservist's total civilian income is given, the difficulty of "who to believe" arises. Here, the total civilian income of the reservists was filled in using the maximum of

the reservist's and the spouse's estimate of the reservist's income.[1] If the total civilian income reported was between $2500 and $90,000 and the spouse's data were not available, the value was not replaced. Since regression estimates are given for all records (see INCXREGR variable), replacement of these values are at the analyst's discretion.

6. If all of the respondent's civilian income variables were reported and the product of weekly civilian income and the number of weeks worked was inconsistent with the total civilian income, then total civilian income was replaced by the product of the weekly variables or the spouse's estimate of the reservist's income, whichever is most appropriate.[2]

REPLACEMENT INDICATORS

Two variables were created that indicate the replacement of the raw survey data in the civilian income variables. These variables give an indication of why the raw survey data were replaced and the source of the replacement data. The definitions of the replacement variables are given below.

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[1]The maximum of total civilian income and the spouse's estimate of the reservist's income is used since in the majority of cases the income estimates differed by a factor of 10. This suggests that a zero was inadvertently dropped from one of the income estimates.

[2]By nature of the questions, the product of the weekly variables should be less than or equal to the total civilian income. If this is not true, either the reservist underreports his income or is reporting wrong values for the weekly variables. If he appeared to underreport his income, the product of the weekly variables was used; if weekly variables appeared questionable, the spouse's estimate of the reserve's income was used.

Variable Definition

The following variables are contained in both the officer and enlisted data sets.

REPLCODE Indicator of the source of data for RESINCOM and the reason why the original data were replaced.

= 0 if original data are used, no replacement needed.

= 1 if total civilian income is low (income < $2500) and the earnings were not consistent with the weekly consistency check or the spouse's data. Replaced with the product of the weekly variables or spouse's data, whichever is most appropriate.

= 2 if total civilian income is high (income > $90,000) and not consistent with the weekly consistency check or the spouse's data. Replaced with the product of the weekly variables earnings or spouse's data, whichever is most appropriate.

= 3 if total civilian income and at least one of the weekly variables is missing (ENLDATA ≤ 10). Replaced with spouse's data.

= 4 if total civilian income is missing but the weekly earning and number of weeks paid are present. Replaced with the product of the weekly variables or spouse's data, whichever is most appropriate.

= 5 if total civilian income is present but the weekly earning or number of weeks paid are missing. Replaced with spouse data.

= 6 if total civilian income is inconsistent with the weekly consistency check (e.g., ECONSIST ≥ 3). Replaced with the product of the weekly variables or spouse data, whichever is most appropriate.

= 7 if total civilian income is missing and has not been filled in; regression estimate is used.

= 8 if the reservist indicated that he did not have a job in 1985 and received no civilian income. No income replacement needed.

REPLSPS Indicator of the source of data for SPSINCOM and the reason why the original data should be replaced.

= -1 if spouse data do not exist.

= 0 if original spouse data are used.

= 1 if original spouse data are missing. Replace with reservist's data.

= 2 if spouse's total civilian income is missing but the weekly earning and the number of weeks worked is present. Replace with product of weekly variables.

= 3 if spouse's total civilian income is inconsistent with the weekly consistency check and reservist's data on spouse are missing. Replace with product of weekly variables.

= 4 if spouse's total civilian income is inconsistent with the weekly consistency check and the reservist's data on spouse are available. Replace with product of weekly variables or reservist's data, whichever is most appropriate.

Distributions of Replacement Indicator Variables

Tables 3.5 and 3.6 show the distribution of the variables REPLCODE and REPLSPS for officer and enlisted reserve members and their spouses.

Table 3.5

DISTRIBUTION OF REPLCODE VARIABLE FOR OFFICER AND ENLISTED RESERVES

REPLCODE	Officer Frequency	Officer Percent	Enlisted Frequency	Enlisted Percent
0	9221	79.6	33380	68.6
1	196	1.7	2122	4.4
2	29	0.3	82	0.2
3	146	1.3	573	1.2
4	427	3.7	1833	3.8
5	54	0.5	231	0.5
6	537	4.6	2855	5.9
7	426	3.7	3748	7.7
8	547	4.7	3812	7.8
Total	11583	100.0	48636	100.0

Table 3.6

DISTRIBUTION OF REPLSPS VARIABLE FOR OFFICER AND ENLISTED RESERVES

REPLSPS	Officer Frequency	Officer Percent	Enlisted Frequency	Enlisted Percent
-1	5246	45.3	28595	58.8
0	3950	34.1	11275	23.2
1	1863	16.1	6497	13.4
2	123	1.1	535	1.1
3	49	0.4	345	0.7
4	352	3.0	1389	2.9
Total	11583	100.0	48636	100.0

IV. CHARACTERISTICS OF RESERVIST'S INCOME

To better understand the total civilian income variables created by RAND and the civilian income of reserve members in general, it is useful to examine some income characteristics of the variables. Exploratory tabulations were run that look at:

- Distribution of individual income
- Comparison with civilian population
- Average household income

DISTRIBUTION OF INDIVIDUAL INCOME

The civilian income distributions of officer and enlisted reserves and their spouses as shown by the variables RESINCOM and SPSINCOM are given below. These distributions show that the replacement rules, given in Sec. III, do not produce unreasonable results. The distributions of civilian household incomes are also given.

Officer Reserves and Spouses

Figures 4.1 and 4.2 illustrate the distributions of civilian income, as shown by the variables RESINCOM and SPSINCOM, for officer reservists and their spouses, respectively. Income level 77.5 includes all officers or spouses who earned $77,500 or more during 1985. The 0 income level refers to officers or spouses who did not have a civilian job in 1985 and did not report a civilian income, had no civilian income in 1985, and other missing values.

Figure 4.3 shows the distribution of total civilian household income. This income was found by adding reservist's civilian income, spouse's civilian income, and other income.

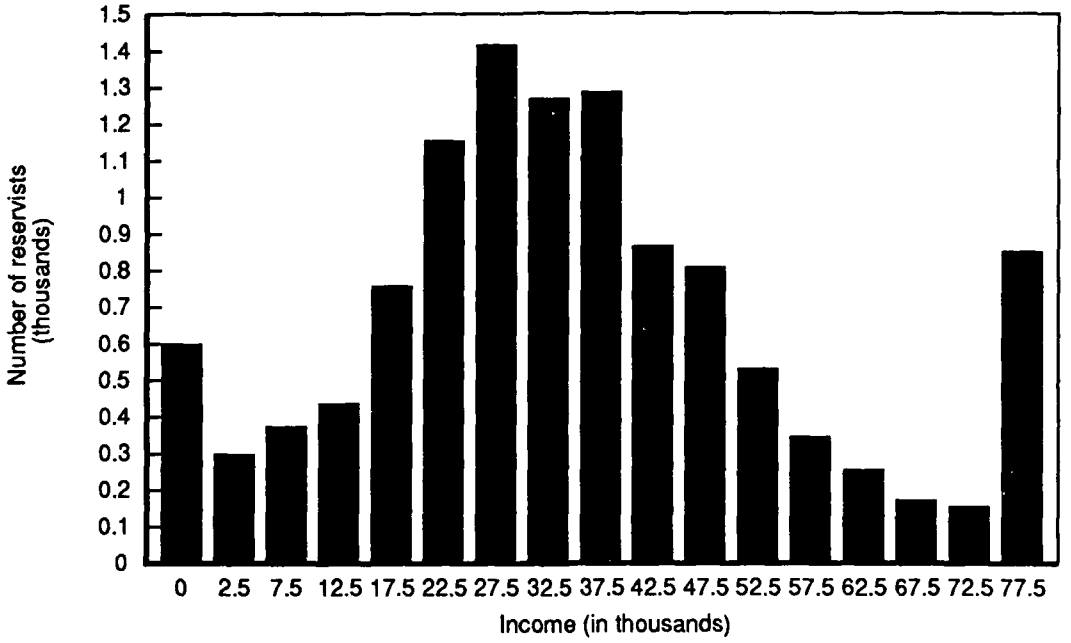

Fig. 4.1--Distribution of civilian income of officer reservists

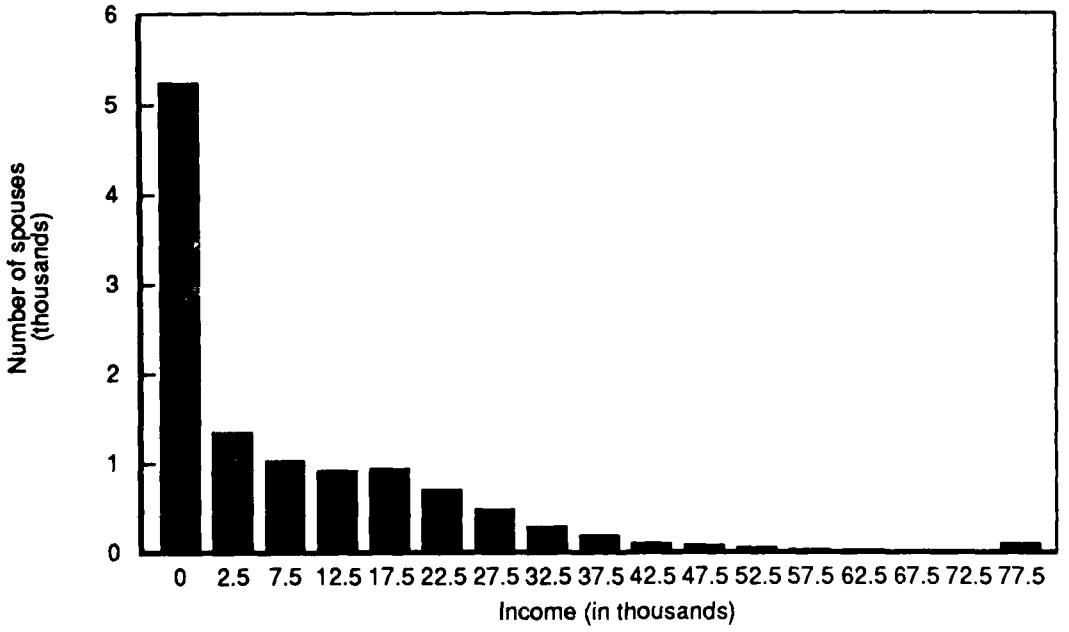

Fig. 4.2--Distribution of income of spouses of officer reservists

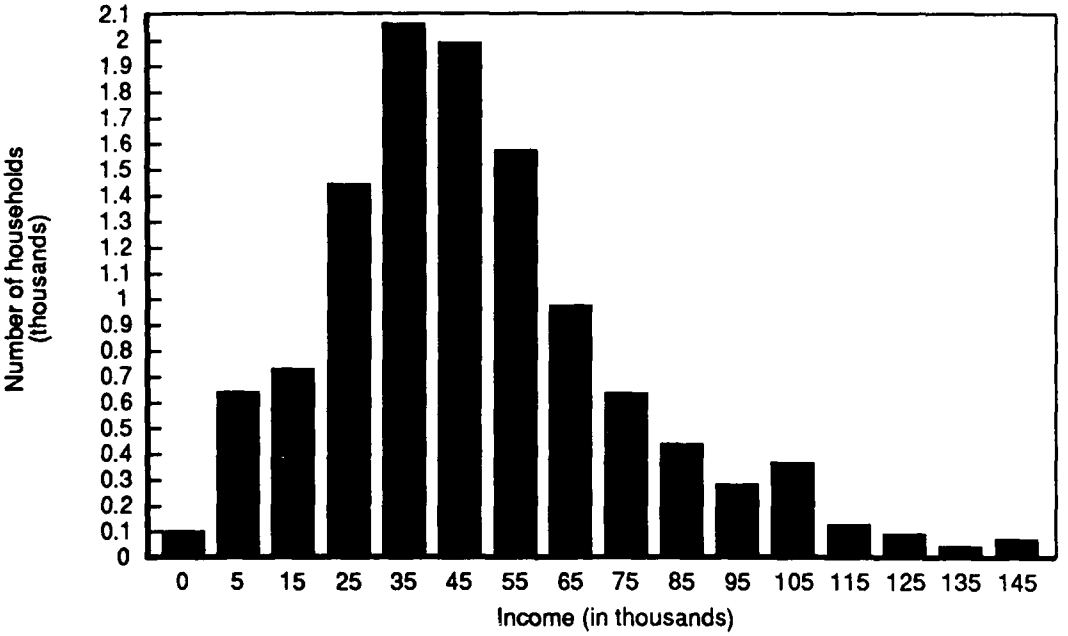

Fig. 4.3--Distribution of total household civilian income of officer reservists

Enlisted Reserves and Spouses

Figures 4.4 and 4.5 illustrate the distributions of civilian income, as shown by the variables RESINCOM and SPSINCOM, for enlisted reservists and their spouses, respectively. Income level 77.5 includes all enlisted reserves or spouses who earned $77,500 or more during 1985. The 0 income level refers to enlisted reservists or spouses who did not have a civilian job in 1985 and did not report a civilian income, had no civilian income in 1985, and other missing values.

Figure 4.6 shows the distribution of total civilian household income. This income was found by adding reservist's civilian income, spouse's civilian income, and other income.

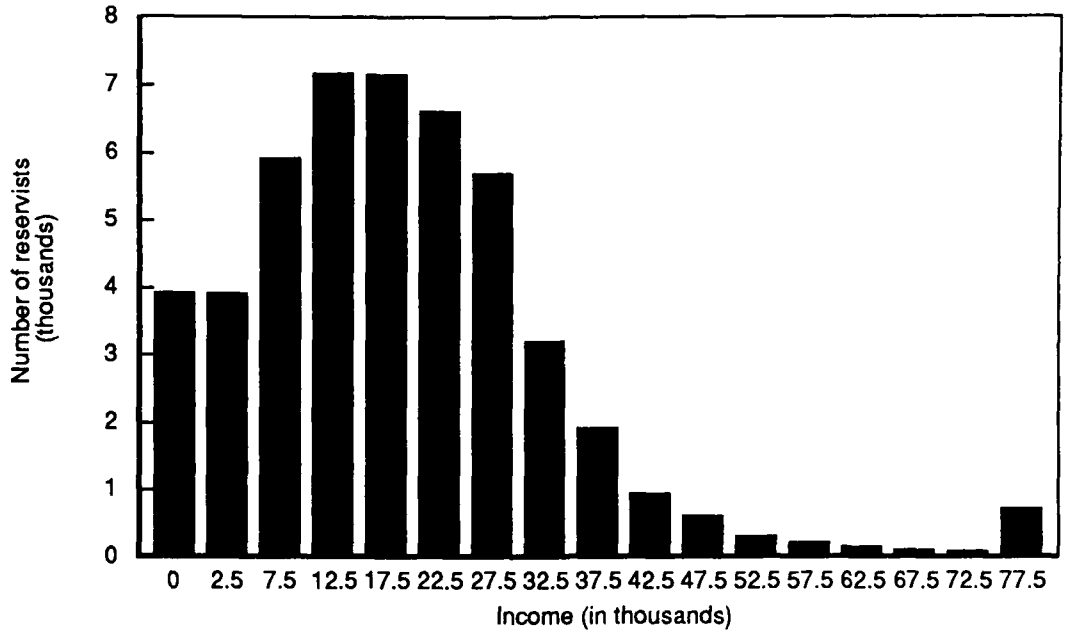

Fig. 4.4--Distribution of civilian income of enlisted reservists

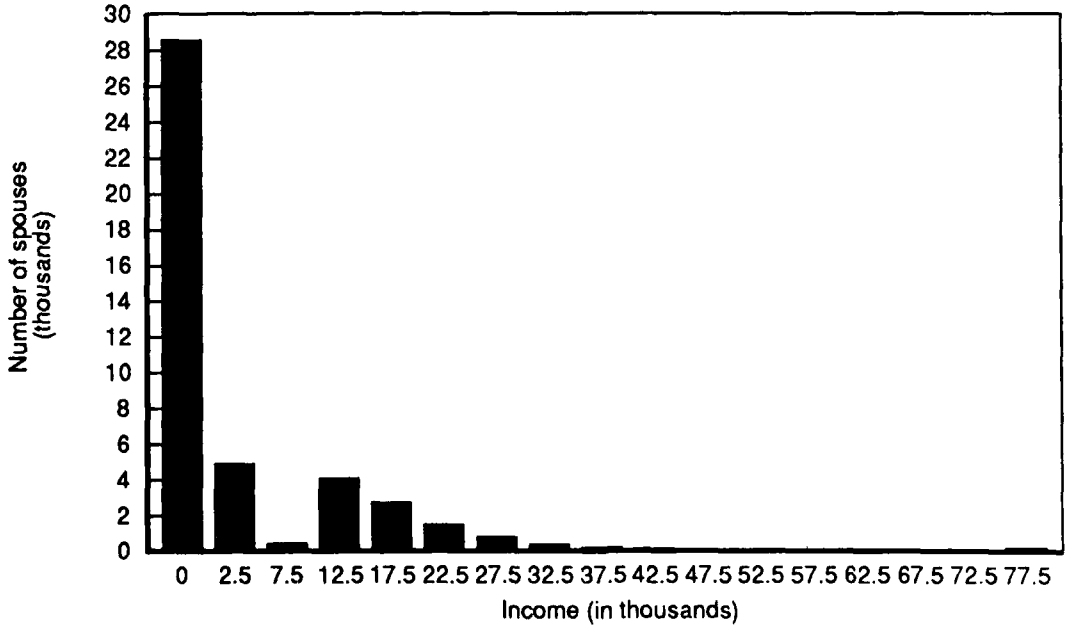

Fig. 4.5--Distribution of income of spouses of enlisted reservists

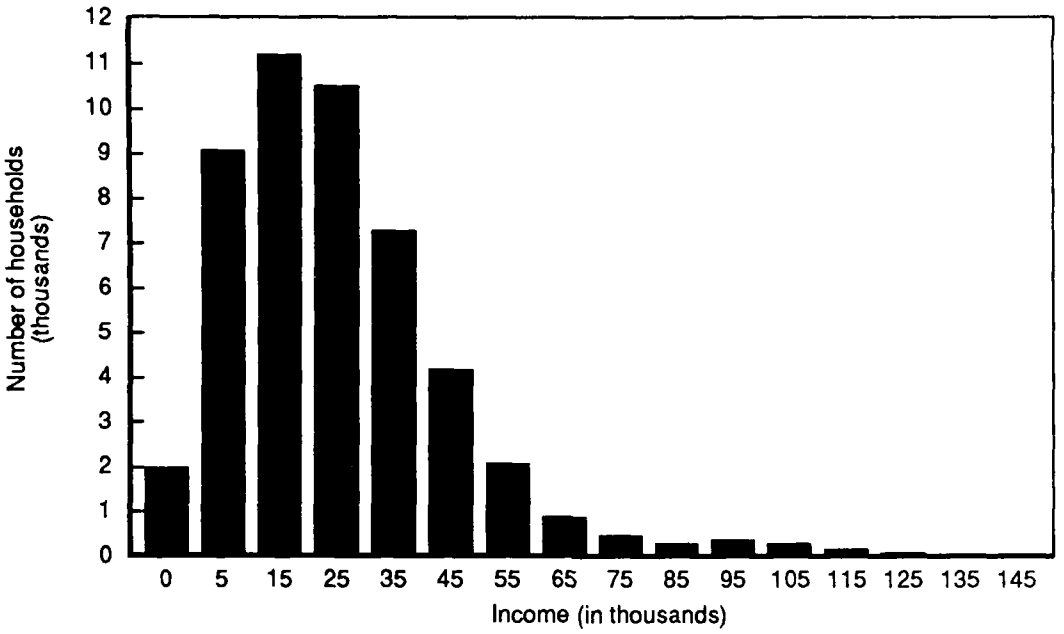

Fig. 4.6--Distribution of total household civilian income of enlisted reservists

AVERAGE HOUSEHOLD INCOMES

The average household incomes of officer and enlisted reserve households are given below. Household income was determined by adding the reservist's total civilian income, spouse's total civilian income, and other income. Since income tends to increase with age, average household incomes are presented controlling for age. The age distribution of the reserve members is also given.

Officer Reserves

Figure 4.7 shows the average civilian household income of officer reserves, controlling for the age of the reserve member. The civilian household income is also delineated by the source of income (reserve, spouse, other income). It is obvious that the reservist is the primary income producer, income increases with age, and other income tends to be only a small portion of civilian household income. Table 4.1 gives the means and standard deviations of the sources of household civilian income.

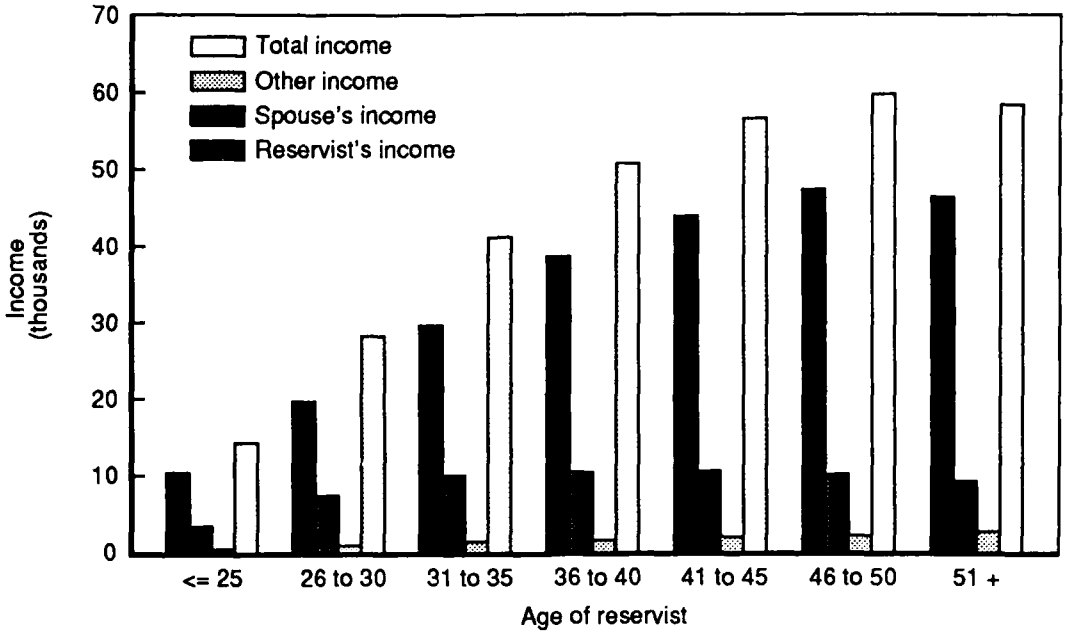

Fig. 4.7--Average household civilian income of officer reserves

Table 4.1

SOURCE OF CIVILIAN HOUSEHOLD INCOME OF OFFICER RESERVES

Reservist's Age	N	RESINCOM Mean	%	SPSINCOM Mean	%	OTHERINC Mean	%	Household Income
≤25	409	10312	72.22	3478	24.36	488	3.42	14279
26-30	1144	19789	69.88	7552	26.67	975	3.45	28317
31-35	2205	29733	72.08	10129	24.55	1391	3.37	41253
36-40	3476	38738	76.08	10559	20.74	1619	3.18	50916
41-45	2346	44109	77.66	10654	18.76	2033	3.58	56796
46-50	1209	47490	79.31	10232	17.09	2156	3.60	59878
51+	791	46452	79.47	9264	15.85	2736	4.68	58451
Total	11580	36676	76.11	9827	20.39	1688	3.50	48191

Enlisted Reserves

Figure 4.8 shows average civilian household income of enlisted reserves, controlling for the age of the reserve member. The civilian household income is also delineated by the source of income (reservist, spouse, other income). Again, the reservist is the primary income producer, income increases with age, and other income is a nominal portion of the total household income of enlisted reserves. Table 4.2 gives the means and standard deviations of the sources of household civilian income.

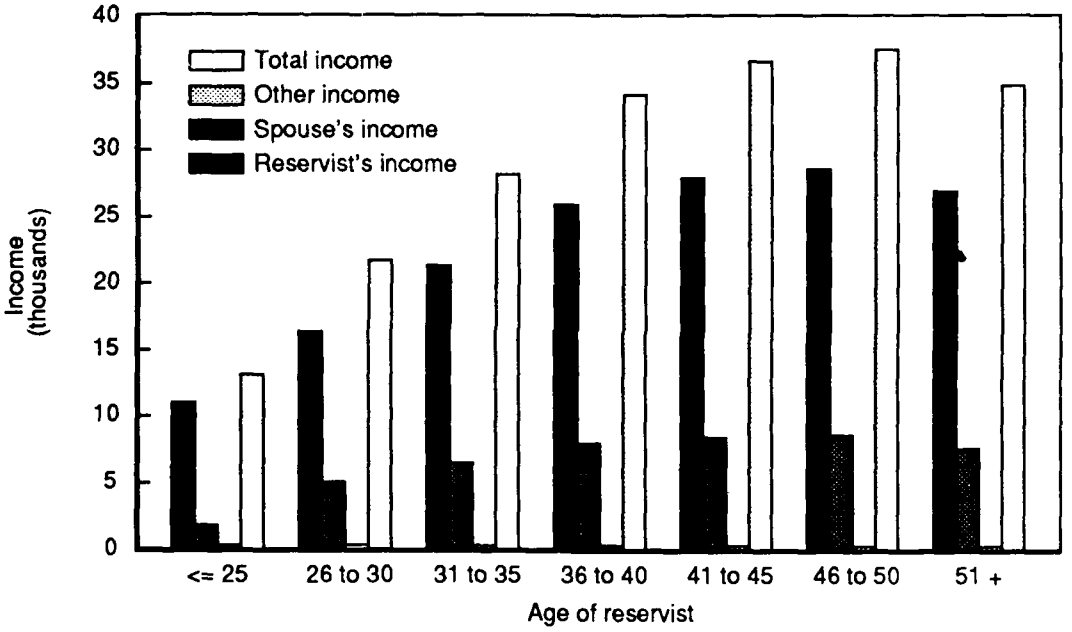

Fig. 4.8--Average household civilian income of enlisted reserves

Table 4.2

SOURCE OF CIVILIAN HOUSEHOLD INCOME OF ENLISTED RESERVES

Reservist's Age	N	RESINCOM Mean	%	SPSINCOM Mean	%	OTHERINC Mean	%	Household Income
≤25	14323	10949	84.02	1788	13.72	294	2.26	13032
26-30	7997	16356	75.17	5044	23.18	358	1.65	21759
31-35	7211	21397	75.75	6514	23.06	335	1.19	28246
36-40	8658	25978	75.88	7984	23.32	274	0.80	34237
41-45	4927	27965	76.20	8433	22.98	300	0.82	36698
46-50	3065	28601	76.26	8606	22.95	298	0.79	37505
51+	2448	26726	77.17	7613	21.98	293	0.85	34632
Total	48629	19694	77.15	5524	21.64	308	1.21	25526